Amendments to the Claims:

Please amend claims 18, 32, 38, 50, 52, 72, 73, 75 and 77, add new claims 78-80, and cancel claims 1-17, 19-24, 27-31, 33-36, 41-49, 51, 53-54, 60, 63, 65-71 and 76. This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-17. (Canceled)

18. (Currently Amended) A method for detecting skin cancer, the method including the steps of:

a) contacting a sample with an antibody that specifically binds an epitope sequence of a $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1, where the antibody ~~distinguishes between functional $P2X_7$ receptors and~~ binds non-functional $P2X_7$ receptors but not functional $P2X_7$ receptors,

b) providing a receptor expression profile, wherein the receptor expression profile is a proportion of non-functional $P2X_7$ receptors to total $P2X_7$ receptors, and

c) comparing the receptor expression profile with that of a normal profile, wherein a higher proportion of non-functional receptors to total $P2X_7$ receptors in the receptor expression profile relative to the normal profile indicates presence of skin cancer.

19-24. (Canceled)

25. (Previously Presented) The method of claim 18, wherein the receptor expression profile is provided using *in situ* imaging techniques.

26. (Previously Presented) The method of claim 18, wherein the receptor expression profile is provided using microscopy, confocal microscopy or fluorescence activated cell sorting.

27-31. (Canceled)

32. (Currently Amended) An isolated antibody ~~for detection of a skin cancer~~, wherein the antibody specifically binds an epitope sequence of a $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1, and wherein the antibody ~~distinguishes between functional $P2X_7$ receptors and~~ binds non-functional $P2X_7$ receptors but not functional $P2X_7$ receptors.

33-36. (Canceled)

37. (Previously Presented) The antibody of claim 32, wherein the antibody is selected from the group consisting of a polyclonal antibody, a monoclonal antibody, a recombinant antibody, a humanized or a human antibody and an antigen binding fragment of each antibody type.

38. (Currently Amended) The antibody of claim 32, wherein the receptors are mammalian $P2X_7$ receptors and the antibody ~~distinguishes between functional receptors having a sequence in which proline at amino acid 210 of SEQ ID NO:1 is in the trans conformation and~~ binds non-functional receptors having a sequence in which the proline at amino acid 210 of SEQ ID NO:1 is in the cis conformation, but not functional receptors having a sequence in which proline at amino acid 210 of SEQ ID NO:1 is in the trans conformation.

39. (Previously Presented) The antibody of claim 38, which is raised against an epitope sequence of the $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1.

40. (Previously Presented) The antibody of claim 39, which is raised against an epitope sequence of the $P2X_7$ receptor extending from Gly200 to Thr215 of SEQ ID NO:1.

41-49. (Canceled)

50. (Currently Amended) A ~~pharmaceutical~~ composition ~~for treatment or prevention of skin cancer in a patient, the composition including a pharmaceutically effective~~

~~amount of an~~ comprising the antibody ~~as claimed in~~ of claim 32, ~~capable of regulating programmed cell death of cells having expressed on their surface non-functional $P2X_7$ receptors~~ and a pharmaceutically acceptable excipient.

51. (Canceled)

52. (Currently Amended) A method of ~~treating, diagnosing or preventing~~ reducing a skin cancer in a patient, the method including the step of topically administering to the patient a preparation comprising an antibody that specifically binds an epitope sequence of a $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1, wherein the antibody ~~distinguishes between functional $P2X_7$ receptors and~~ binds non-functional $P2X_7$ receptors but not functional $P2X_7$ receptors.

53-54. (Canceled)

55. (Previously Presented) The antibody of claim 32, wherein the antibody is selected from the group consisting of a chimeric antibody, humanized or human antibody and an antigen binding fragment of each antibody type.

56. (Previously Presented) The antibody of claim 55, wherein a radiolabel is attached to the antibody suitable for detection by use of scanning technology.

57. (Previously Presented) The antibody of claim 56, wherein the scanning technology is positron emission tomography.

58. (Previously Presented) The antibody of claim 55, wherein a fluorescent label is attached to the antibody suitable for use in flow cytometry.

59. (Previously Presented) The antibody of claim 55, wherein a matrix is attached to the antibody suitable for colorimetric assay.

60. (Canceled)

61. (Original) A test kit for detecting non-functional $P2X_7$ receptors, the kit including the antibody of claim 32, together with a normal $P2X_7$ receptor expression profile.

62. (Previously Presented) A test kit for detecting non-functional $P2X_7$ receptors, the kit including the antibody of claim 55, together with a normal $P2X_7$ receptor expression profile.

63. (Canceled)

64. (Previously Presented) A diagnostic kit comprising:(1) an antibody that specifically binds to an epitope within residues Gly200 to Cys216 of a $P2X_7$ receptor of SEQ ID NO:1 without specifically binding to other regions of the $P2X_7$ receptor, and (2) an antibody that specifically binds an epitope outside residues Gly200 to Cys216 of a $P2X_7$ receptor of SEQ ID NO:1 without specifically binding to an epitope Gly200 to Cys216 of the $P2X_7$ receptor.

65-71. (Canceled)

72. (Currently Amended) An isolated antibody that specifically binds an epitope sequence of the $P2X_7$ receptor extending from Gly200 to Cys216 of SEQ ID NO:1, wherein the antibody ~~distinguishes between functional $P2X_7$ receptors and~~ binds non-functional $P2X_7$ receptors~~, and wherein proline at amino acid 210 is in the cis conformation~~ having a sequence in which the proline at amino acid 210 of SEQ ID NO:1 is in the cis conformation, but not functional receptors having a sequence in which proline at amino acid 210 of SEQ ID NO:1 is in the trans conformation.

73. (Currently Amended) An isolated antibody ~~for detection of a skin cancer~~, wherein the antibody specifically binds an epitope sequence of a $P2X_7$ receptor extending from Gly200 to Thr215 of SEQ ID NO:1, and wherein the antibody ~~distinguishes between functional $P2X_7$ receptors and~~ binds non-functional $P2X_7$ receptors but not functional $P2X_7$ receptors.

74. (Previously Presented) The method of claim 18, wherein the skin cancer is selected from the group consisting of basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma and dysplastic naevi.

75. (Currently Amended) The antibody of claim 32, wherein the antibody is for detection of a ~~the~~ skin cancer ~~is~~ selected from the group consisting of basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma and dysplastic naevi.

76. (Canceled)

77. (Currently Amended) The method of claim **[[51]]** **52**, wherein the skin cancer is selected from the group consisting of basal cell carcinoma (BCC), squamous cell carcinoma (SCC), malignant melanoma and dysplastic naevi.

78. (New) The method of claim 52, wherein the skin cancer is basal cell carcinoma (BCC).

79. (New) The method of claim 52, wherein the antibody is topically administered in a cream.

80. (New) The composition of claim 50, wherein the composition is a cream.